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Claim 63. An oscillating sprinkler unit, comprising:

a sprinkler head mounted for rotation about a first axis;

a drive motor;

a reversible gear train for drivingly connecting said drive

5       motor for driving said sprinkler head in alternate directions, comprising final drive gear means connected to said sprinkler head, shiftable drive means comprising alternately operable terminal gear means and carrier means for carrying said terminal gear means and shiftable to alternately engageable positions with said final drive gear means for driving said sprinkler head in alternate directions;

shifting arm means pivotally mounted adjacent said carrier means and movable between alternate shifting positions

15      by engagement with shoulder means carried by said final drive gear means, and lost motion means for connecting said shifting arm means with said carrier means for shifting said carrier means between said alternately engageable positions upon movement of said shifting arm means between said alternate shifting positions;

20      first over-center biasing means for maintaining said carrier means in a selected one of said alternately engageable positions until positively shifted therefrom by said shifting arm means; and

25      second over-center biasing means for maintaining said shifting arm means in a selected one of alternate shifting positions *until engagement* by said shoulder means.

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Claim 64. The sprinkler of claim 63 wherein:  
said shiftable drive means comprises a drive gear driven  
by said drive motor and mounted for rotation about  
a second axis spaced from said first axis;  
5 said carrier means is mounted for pivotal movement about  
said second axis; and  
said shifting arm means is mounted for pivotal movement  
about said first axis.

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Claim 65. The sprinkler unit of claim 64 wherein:  
said carrier means comprises a yoke surrounding said  
first axis and said lost motion means comprises  
shoulder means on the opposite side of said first  
5 axis from said second axis for alternate engagement  
with said shifting arm means.

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Claim 66. The sprinkler unit of claim 65 wherein:  
said first over-center means comprises a spring engaging  
said yoke between said shoulder means.

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Claim 67. The sprinkler of claim 66 wherein:  
said spring comprises a generally U-shaped leaf spring.

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Claim 68. The sprinkler system of claim 66 wherein:  
said first over-center means maintains said terminal gear  
means in engagement until said yoke is biased  
by said second over-center means through said shifting  
5 arm means.

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Claim 59. An oscillating sprinkler unit, comprising:

a sprinkler head mounted for rotation about a first axis;

a drive motor;

a reversible gear train for drivingly connecting said

5 drive motor for driving said sprinkler head in alternate directions, comprising a final drive gear connected to said sprinkler head, shiftable drive means comprising alternately operable terminal gear means and carrier means for carrying said terminal gear

10 means and shiftable to alternately engageable

(P) positions with said final drive gear for driving said sprinkler head in alternate directions;

shifting arm means pivotally mounted adjacent said

carrier means and movable between alternate shifting

15 positions by engagement with shoulder means carried

by said final drive gear means, and lost motion

means for providing engagement with said carrier

means for shifting said carrier means between said

alternately engageable positions upon movement of

20 said shifting arm means between said alternate

shifting positions;

first over-center biasing means for maintaining said

carrier means in a selected one of said alternately

engageable positions until positively shifted

25 therefrom by said shifting arms means; and

second over-center biasing means for maintaining said

shifting arm means in a selected one of alternate

shifted positions *until engagement* by said shoulder means.

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Claim 70. The sprinkler of claim 69 wherein:  
said shiftable drive means includes a drive gear driven  
by said drive motor and mounted for rotation about  
a second axis spaced from said first axis;  
5 said carrier means mounted for pivotal movement about  
said second axis; and  
said shifting arm means mounted for pivotal movement  
about said first axis.

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Claim 71. The sprinkler unit of claim 70 wherein:  
said carrier means comprises a yoke surrounding said  
first axis and said lost motion means comprises  
shoulder means on the opposite side of said first  
axis from said second axis;  
5 said over-center means comprises spring means engaging  
said yoke between said shoulder means; and  
said spring means comprises a generally U-shaped leaf  
spring.

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Claim 72. The sprinkler system of claim 71 wherein:  
said first over-center means maintains said terminal gear  
means in engagement until said yoke is biased by said  
second over-center means through said shifting arm  
means.  
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Claim 73. An oscillating sprinkler unit, comprising:

a housing having a generally cylindrical configuration  
with a central axis, an inlet at a lower end for  
attachment to a source of water and an outlet at an  
5 upper end;

a sprinkler head mounted at said upper end for rotation  
about said central axis;

a drive motor mounted in said housing for driving said  
sprinkler head;

10 a shiftable gear train comprising terminal drive gear  
means, including a pair of terminal gears, and an  
internal gear connected to said sprinkler head,  
shiftable means for alternatively shifting said  
terminal gears alternatively into engagement with  
15 said internal gear for driving said sprinkler head  
in alternate directions;

said shiftable gear train comprising a drive shaft driven  
by said drive motor and a drive gear mounted for  
rotation about a second axis offset from said  
20 first axis;

a pivoting yoke including a carrier mounted for pivotal  
movement about said second axis;

one of said terminal gears mounted on said carrier on  
one side of said second axis, and the other of said  
25 terminal gears mounted on said carrier on the other  
side of said second axis;

a shifting arm means mounted adjacent said yoke for pivotal movement about said first axis to alternate shifting positions by engagement with shoulder

30 means carried by said internal gear;

lost motion means disposed between said shifting arm and said yoke for connecting said shifting arm means to said yoke for shifting said terminal gears to alternately engageable positions;

35 first over-center biasing means for maintaining said carrier in a selected one of said alternately engageable positions until positively shifted therefrom by said shifting arm means; and

second over-center biasing means for maintaining said shifting arm means in a selected one of said alternate shifting positions until engagement by said shoulder means.

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Claim 74. A sprinkler unit according to claim 73  
wherein:  
said first over-center biasing means comprises a generally U-shaped spring disposed between said carrier and fixed means on said housing for biasing said carrier to said one of said alternately engageable positions.

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